GEOTECHNICAL TESTING SERVICES

ROCK MECHANICS CAPABILITIES

SGS offers a comprehensive range of geotechnical services including rock mechanics testing worldwide. Our expert technicians can provide standard field and laboratory testing on rock, soils and aggregates, utilizing both destructive and non-destructive testing methodologies. Many of our facilities comply with ISO/IEC 17025 standards for specific registered tests.

Whether your business is construction, mining, oil sands or elsewhere, SGS can provide you with accredited standard testing that meets all of your geotechnical testing needs.

	GLADSTONE, AUSTRALIA	EDMONTON , CANADA	FORT MCMURRAY, CANADA	PRAGUE, CZECH REPUBLIC	SANTIAGO, CHILE	SHANGHAI, CHINA	MUMBAI, INDIA	PYOUNGTAEK, SOUTH KOREA	MADRID, SPAIN	KAOHSIUNG, TAIWAN	SITTARD, THE NETHERLANDS	BECKLEY, USA	HO CHI MINH CITY, VIETNAM
ROCK MECHANICS TESTING													
Direct shear *Measures peak and residual direct shear strength as a function of stress normal to the sheared plane.*					•			•				•	
Uniaxial compressive strength *With & without determination of static elastic moduli.*				•	•	•	•	•		•	•	•	•
Triaxial compressive strength *Compression test with addition of confining pressure around cylinder using pressurized oil.*					•			•				•	
Tensile splitting strength (axial & dimetrial) *Compression of cylindrical samples until failure.*				•	•		•	•	•	•	•	•	•
Point load strength test *Determines the point load strength index of specimens.*					•			•				•	•
Slake durability test *Determines weathering resistance of shales, mudstones, siltstones and other clay-bearing rocks.*					•			•				•	

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Sonic velocity *Measures pulse velocities of compression & waves through rock. Predicts ultrasonic electric constants & indicates fissuring.*					•					•		•	
Porosity *Determines porosity, relative proportions of solid areas, and void spaces in rock.*					•							•	
Angle of internal friction *Determines the angle at which a material will slip on its own surface.*					•							•	•
Test specimen preparation *Preparation for testing cylindrical specimens from pieces of rock or cores*					•					•	•	•	•
OTHER ROCK TESTING													
Compression tests (cylinders and cores) *Determines the compressive strength of rocks.*	•	•	•	•	•	•	•	•	•	•	•		•
Los Angeles coefficient *Measures resistance to fragmentation.*										•	•		•
Aggregate % crushed faces *Determines % of rock faces that are fractured having sharp or slightly blunted edges to maximize shear strength in mixtures.*	•	•	•						•	•	•		•
Coarse sieve analysis	•	•	•		•	•	•		•	•	•		•
Bulk density *(by immersion, shown covered with paraffin)*					•		•			•	•		•
Loose bulk density and voids							•			•	•		•
Density and water absorption				•			•	•		•	•		•
Degree of saturation					•								
Relative humidity					•					•			
Contamination by lightweight material										•	•		

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SOIL AND AGGREGATE TESTING													
Sampling of aggregates		•	•			•	•		•	•	•		•
Identifying & estimating the proportions of constituent materials											•		
Polished stone value *Determines an aggregate's resistance to skidding.*											•		
Angle of internal friction *Determines the angle at which a material will slip on its own surface.*					•								•
Single point CBR & four point CBR *Determines the California Bearing Ratio (CBR) of pavement subgrade, subbase and base course materials from laboratory compacted specimens.*	•					•	•	•	•	•	•		•
Standard Proctor compaction & modified Proctor compaction *Determines the relationship between molding water content & dry unit weight of soils.*	•	•	•			•	•		•	•	•		•
Single mold (one point Proctor) *Determines max dry density of aggregates using one point Proctor test measurement and known moisture-density curves of material.*		•	•			•	•			•	•		•
Resistance to wear (Micro-Deval)										•	•		
Resistance to fragmentation											•		
Wet/dry variation – 10% fines (aggregate durability) *Determines crushing resistance of road bed mixtures.*	•						•						
Percentage of particles with crushed and broken surface										•	•		
Fineness modulus *Obtained by adding total % of an aggregate retained on each of a specified series of sieves, divided by 100.*							•			•	•		•

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Flakiness index *Determines flakiness index of coarse aggregates.*	•					•	•		•	•	•		•
Elongation index *Determines elongation index of coarse aggregates.*	•					•	•		•	•	•		•
Sieve analysis *Determines particle size distribution of aggregates*	•	•	•			•	•		•	•	•	•	•
Hydrometer analysis (silt test) *Sizing of particles too small for sieve analysis such as fine grained soil, silt & clay.*		•	•			•	•		•	•	•	•	•
Atterberg limits (Fine grained soil classification) *Determines both liquid limit and plastic limit, which is then used to determine the plasticity index (PI).*	•	•	•			•	•		•	•	•	•	•
Loose bulk density and voids							•			•	•		•
Density and water absorption				•			•	•		•	•		•
Moisture content/degree of saturation	•	•	•				•		•	•	•	•	•
Bitumen, mineral, water %		•	•				•		•	•			•
% Bitumen removal		•	•				•		•	•			•
Field dry density (nuclear densometer, core methods) *Determines soil dry density & moisture content.*	•	•	Rental (•)				•		•	•			•
Linear shrinkage *% decrease in length of bar of soil dried in an oven from the liquid limit.*	•					•					•		•
Drying shrinkage											•		•
Freeze-thaw resistance											•		
Level of swelling clay minerals											•		
Water soluble chlorides										•	•		•
Acid soluble sulphates										•	•		•
Presence of iron-sulphide particles										•	•		
Fulvic acid test											•		

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Alkali silica reaction risk (UAMBT, CPT)										•	•		•
Alkali equivalent										•	•		•
Organic Impurities	•	•	•				•			•	•		•
Setting time delay											•		

CONTACT INFORMATION

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